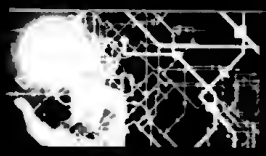

Participating in a peer network can yield big career benefits for women in IT. PAGE 28

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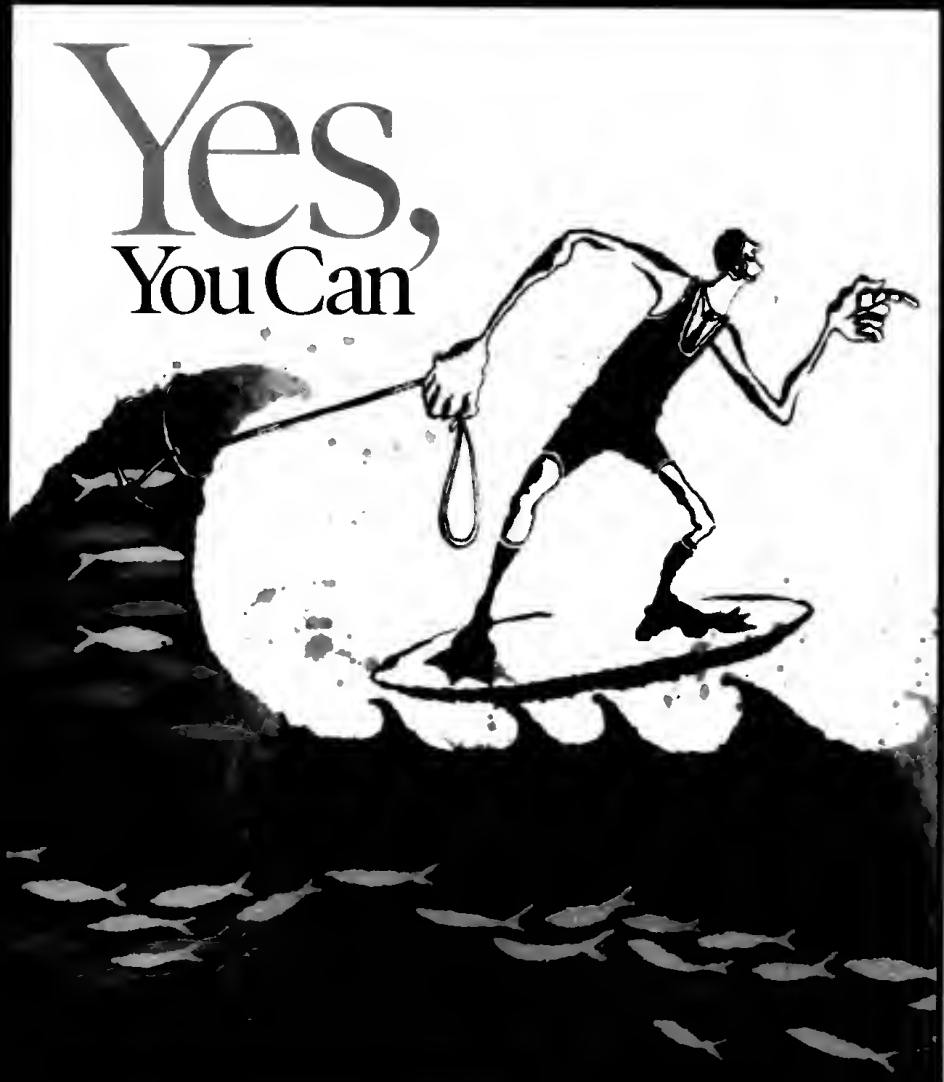

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VoIP AS YOU ARE.
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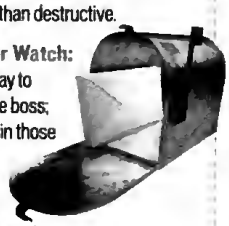

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COVER ART BY BELLE MELLOR

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What the Web Knows About You

What data is available about you in cyberspace? Where does it come from, and what risks does it present? *Computerworld*'s Robert L. Mitchall set out to see how much information he could find about himself online. What he discovered is frightening.

Building a Better CAPTCHA

CAPTCHA technology used to be an easy way for Web administrators to block spam bots. Then malware authors and spammers started using it to do their dirty work. Can CAPTCHA systems be repaired and redeemed?

The Cloud and Compliance: Be Careful

If you're in an industry that requires regulatory compliance – and who isn't these days? – it pays to check out your cloud computing services vendor thoroughly. Here are some things to keep in mind.

Blog Spotlight

How Amazon Could Screw Up E-books

On Feb. 9, Amazon.com will announce an upgrade of its Kindle e-book reader. The company is in a great position to control digital books the way Apple controls digital music. But it could still screw it all up, says Mike Elgan.

Being Anti-Linux Is Bad For Your Business's Health

In the current economic crisis, proprietary software vendors are trending down in a hurry, while open-source companies are actually prospering. Just compare Microsoft and Sun to Red Hat and Novell, says Steven J. Vaughan-Nichols.

Why Apple Disdains Netbooks

Computer makers all over the world are embracing netbooks because they're the fastest-growing segment (well, the *only* growing segment) of the PC market. These days, everyone loves netbooks – everyone except Apple, that is. Preston Gralla explains why.

Internet Explorer 8 RC1

REVIEW: Release Candidate 1 of Microsoft's IE8 browser offers faster performance, better searches, more security and enough stability to be truly useful, says Preston Gralla.

How to Fend Off The Downadup Worm

FAQ: The biggest worm in years hit 9 million PCs in just two weeks. Here are some tips to help you protect your computer.

SHARK BAIT

Flush Twice – It's A Long Walk To the Management Office

There are smart places to store your company's server, and there are not-so-smart places. The men's room might be one of those not-so-smart places.

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■ EDITOR'S NOTE

Don Tennant

Better Than That

CNN called it "Bloody Monday." On Jan. 26, more than 71,400 jobs were lost as massive cuts were announced by manufacturing and service companies. Yet even that did little to distract the attention of some who saw a darker cloud hanging over Microsoft's announcement several days earlier that it was cutting 5,000 jobs.

It was on Bloody Monday that *Computerworld*'s Patrick Thibodeau reported that an undisclosed number of H-1B visa holders would be among those Microsoft workers who were losing their jobs. Microsoft would only say that the number of foreign workers affected was "significant."

The dark cloud burst when there was no proclamation by Microsoft that H-1B visa holders would be the first to go (see story, page 16). Companies are under no legal obligation to lay off foreign workers ahead of U.S. workers, and that didn't sit well with many of our readers. As is the case whenever H-1B visas are discussed, emotions ran high among readers who commented on Thibodeau's story. But the antiforeigner rhetoric was even more intense than usual, and there was a strong tendency to equate Microsoft with a demonic image of Bill Gates.

"Send those people home!" one reader hissed. "If our economy ever recovers, we still don't need H-1B people. We need [American citizens]! Bill Gates and Microsoft, and other firms, have made a circus out of H-1B."

If the H-1B program is a circus, there's plenty of blame to be shared. No doubt some companies abuse the program, and no doubt the government has failed to take adequate measures to prevent those abuses. But what's most troubling is the garish sideshow performed by those whose hateful nationalism (as opposed to honorable patriotism) targets the H-1B program.

A comment that was particularly alarming came from a reader who brought up the 2007 case of the YouTube video in which attorney Lawrence Lebowitz provided advice on how to fill job vacancies with foreign workers. "Our goal is clearly not to find a qualified and interested U.S. worker," Lebowitz proclaimed. The outlandish demonstration of intent to abuse the system was disgusting. But not as disgusting as the reader's comment. In a posting with the subject line "Traitors," the anonymous reader wrote that he had found Lebowitz's e-mail address. Yet that wasn't enough.

■ What's most troubling is the garish sideshow performed by those whose hateful nationalism targets the H-1B program.

"Anyone know his home address so I can ask him PERSONALLY why he is a traitor to the United States?" the reader asked. "How about where he eats, what gym he goes to, where he plays golf, etc.? I would like to post all this information on a Web site containing this type of information on H-1B supporters and other treasonous acts."

I'm no fan of Lebowitz, but which is more objectionable — a slimy lawyer or a creepy stalker?

It was amid all this gloom that I happened to meet with Charles Johnson, general manager of Microsoft's worldwide manufacturing sector business. We talked about the job losses and what Microsoft is doing to help manufacturers cut costs. When I brought up the H-1B issue, Johnson put it in a sensible perspective.

"We're a virtual company — I've hired people who live everywhere," he said, referring to a few hires in China and Singapore. "One of them I would love to have moved to Redmond, but the value he's providing there is even greater, especially during the economic downturn, because he has real insights — doesn't have an 'everything's built in Redmond' mentality."

Anyone whose knee-jerk reaction is to write Johnson off as another Microsoft demon who's giving jobs to foreigners and doesn't have America's best interests at heart should consider this: He's a West Point graduate who was deployed to Desert Storm in 1990 as a platoon leader in the 82nd Airborne. He was awarded a Bronze Star.

Foreign workers aren't the enemy, nor are those who hire them. The enemy is the sense of hopelessness that triggers misplaced blame in difficult times. We've always been stronger and braver than that. Let's not lose those attributes when we need them the most. ■

Don Tennant is Computerworld's *senior editor-at-large. You can contact him at don_tennant@computerworld.com, and visit his blog at* http://blogs.computerworld.com/tennant.

RESPONSE TO:

The Other Casualty

Jan. 19, 2009

I fully understand that these are hard times. I witnessed it firsthand earlier this month at the NRF event in NYC. Exhibits that used to take all day to get through took me just a few hours (and I even went around twice!). CES is another example of low turnout this year.

What I am not seeing is the creativity needed to keep all of us in the IT world engaged. Getting travel approval these days is tough, but what I am not seeing are alternative ways in which to bring us together for collaboration and for vendors to show us what they have that's new. Why aren't we using the technology at our disposal to hold events in hard times? Who will be first to bring in vendors and hold a completely online event? Yes, there are online events out there now, but they lack the full event experience that we need in these hard times. We need something that offers virtual exhibits by vendors, online seminars, guest speakers and even salespeople to push their products. When it is all done, it could be available for on-demand showings.

Get creative! We in IT do it daily to make things work.

■ **Submitted by:** *Michael Agens, project adviser, Hess Corp.; 2002* Computerworld *Premier 100 IT Leader*

RESPONSES TO:

More Than a List

Jan. 19, 2009

A lot of programmers are perfectly aware that their code could potentially contain security holes. Handing them this list isn't going to help much. However, the problem is not, as Frank Hayes seems to see, that they can't be bothered. The problem is that they aren't given enough time or resources to check for security problems. The failure of software to live up to security standards is usually caused at the manager level. Companies are not going to improve their software quality if it costs them too much.

■ **Submitted by:** *Anonymous*

The Mitre Top 25 is an excellent effort to capture and document the many issues facing the network security industry. What is missing becomes obvious, however, when you examine Mitre's list of credited contributors. I do not see any major end users. One would think that the major industries and companies that this list is intended to serve would be among the participants, as these are the folks that purchase security products and need to secure their networks. Furthermore, most of the major network security vendors are conspicuously absent. Including major end users as part of the vetting process would add to the credibility of such a list.

A list such as this could, unless managed properly, promote a false sense of security. This would leave the security industry in the situation where the criteria and the test methods become out of date as attack technology continues to grow at alarming rates.

■ **Submitted by:** *Brian Monkman, technology programs manager, ICSA Labs*

RESPONSE TO:

Turning Up the Heat To Save Energy

Jan. 19, 2009

It seems to me that the bulk of this article says two things: Don't let the hot exhaust air mix into the cold inlet air, and make sure that the chillers pull the hot air in rather than letting it stagnate over the machines.

Obvious? I think so. Easy? Well, maybe not. But calling a data center from 2007 "state of the art" when it doesn't do this well suggests that it was state of the art in form, but not in function.

■ **Submitted by:** *Anonymous*

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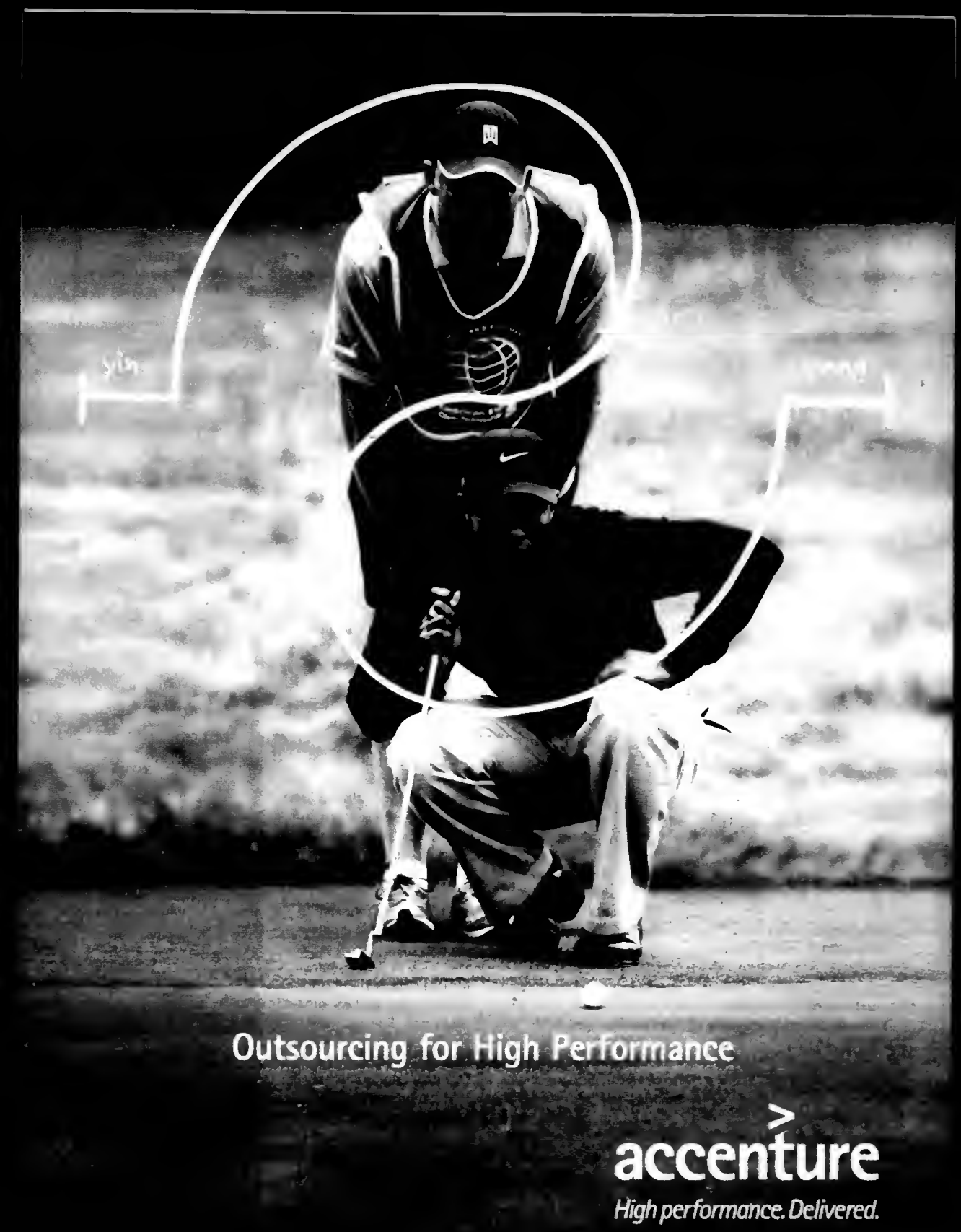
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News Digest

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THE WEEK AHEAD

MONDAY: Soldier Technology US 2009, a conference focused on battlefield technologies, opens in Arlington, Va.

WEDNESDAY: Cisco plans to report its Q2 financial results. The networking vendor said in November that it expected revenue to be down 5% to 10% on a year-to-year basis.

SUNDAY: The International Solid-State Circuits Conference begins in San Francisco; Intel is due to present a paper on an upcoming eight-core Xeon processor at the event.

THE IT ECONOMY

Job Cutbacks Continue To Escalate at IT Vendors

THE LIST of IT vendors that are laying off workers grew even longer last week, with companies such as SAP AG and Sprint Nextel Corp. announcing cutbacks.

In doing so, they joined Microsoft, Intel, Sun Microsystems, EMC and other top vendors that had already disclosed layoff plans in response to the worldwide economic recession.

And then there's IBM. Without announcing any layoffs, it has let more than 4,600 workers go over the past two weeks, according to the Alliance@IBM labor union, which expects more job cuts at the company.

Alliance@IBM, a Communications Workers of America local that doesn't have enough members to gain official recognition as a bargaining unit, has gotten its information from IBM workers who said they have been laid off. Many have also posted accounts of what's happening at the company on the union's Web site.

IBM confirmed that employees were being let go, but it refrained from using the word *layoffs* to describe the ongoing cuts. And spokesman Doug Shelton said that IBM doesn't plan to disclose the number of jobs being eliminated.

"This is an ongoing process that we do throughout the year to match skills and resources with our client needs," Shelton said. "We don't think it's necessary every time we do that to make an announcement about it."

Other vendors are acknowledging that their cutbacks are a direct result of the economic crisis. For instance, SAP, which plans to cut 3,000 jobs by year's end in order to reduce costs, said that it won't issue any software revenue forecasts because of the economic and business uncertainties.

2008 "could have been the best year in SAP's history," co-CEO Leo Apotheker said last week. "But since September, we've been talking about a new reality in the world's economy."

The layoff numbers are eye-catching: 8,000 workers at Sprint, 6,000 at both Intel and Sun, and 5,000 at Microsoft (see related story, page I6).

Even so, some of the vendors are still doing some hiring as well. Microsoft CEO Steve Ballmer said in a Jan. 22 e-mail to employees that the net workforce reduction at the company would be more like 2,000 to 3,000 people over the next 18 months. The software vendor currently has more than 700 open jobs in the U.S. listed on its careers site.

Meanwhile, IBM lists 3,200 job and internship openings worldwide, more than 550 of them in the U.S.

— Patrick Thibodeau, with John Ribeiro of the IDG News Service

Windows 7 To Be Tested Thoroughly

Microsoft Corp.'s new Windows 7 will be "more thoroughly" monitored for compliance with a 2002 antitrust settlement than earlier versions of the operating system, according to a status report filed last week with the federal judge overseeing the company.

A three-member panel of computer experts created by the decree has been testing Windows 7 since at least last March. Its work was significantly delayed late last year when Microsoft delivered 30 new and 87 revised technical documents that explained "changes to the protocols in Windows 7."

Microsoft has been under a microscope since 2002, when it agreed to document communications protocols for other developers, including competitors, and submit to oversight by federal regulators.

– GREGG KEIZER

If State and federal officials must deliver regular reports on whether Microsoft is adequately documenting its communications protocols.

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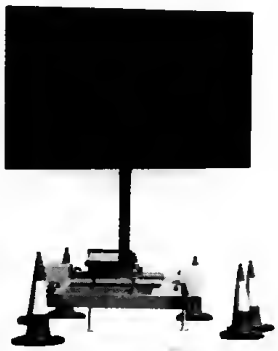

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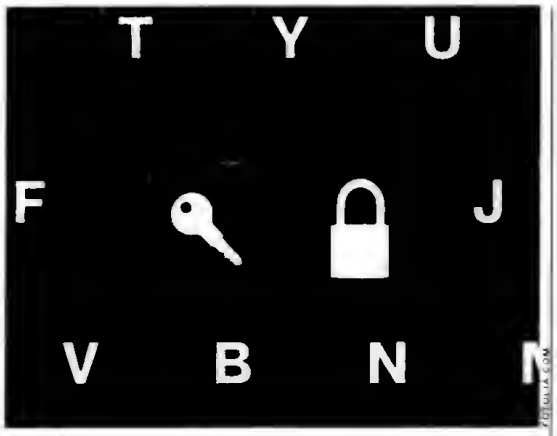


SECURITY

Drive Makers Agree on TCG Encryption Standard

THE WORLD'S largest disk drive makers have pledged to support three new Trusted Computing Group (TCG) encryption standards for hard disk drives, solid-state drives and encryption-key management applications.

The standards group last week released the final specifications for encrypting data stored in laptop and desktop PCs and in enterprise-class drives used in servers and disk storage arrays.

"This represents interoperability commitments from every disk drive maker on the planet," said Robert Thibadeau, chief technologist at Seagate Technology LLC and chairman of the TCG.

Noting that the standard requires a "cryptographically strong password," he said any storage device that was lost or stolen would become "a brick. You [couldn't] even sell it on eBay."

Any disk that uses the specification will be locked and unusable without a password.

TCG members pledging support for the standards include top storage vendors such as Fujitsu, Hitachi Global Storage Technologies, Seagate, Samsung Electronics, Toshiba and IBM.

In fact, Seagate, Fujitsu and Hitachi already support the standard on some of their drives.

Considering the TCG's membership, "in five years, you can imagine any drive . . . will be encrypted, and there will be virtually no cost for it," said Jon Oltsik, an analyst at Enterprise Strategy Group.

These are the three new standards:

■ **TCG Storage Work Group Opal Security Subsystem Class,** which outlines minimum requirements for storage devices used in PCs and laptops.

■ **TCG Storage Work Group Enterprise Security Subsystem Class,** for data center drives running high-volume applications.

■ **TCG Storage Interface Interactions Specification,** intended to ease interactions between TCG specifications and those of other standards groups.

— Lucas Mearian

Short Takes

has agreed to buy a developer of cryptography technology, for $73 million. The deal came three days after Research In Motion Ltd. dropped a hostile $52 million bid for Certicom.

is postponing construction of a planned data center facility in Iowa as part of a cost-cutting effort.

Rob Enslin has been promoted to president and CEO of replacing Gregory Tomb, who is taking a leave of absence for personal reasons. A 16-year SAP veteran, Enslin was previously COO of the unit.

CORRECTION

Joseph Antonellis was incorrectly identified as State Street Corp.'s CIO in the Jan. 12 Editor's Note. Antonellis is State Street's vice chairman. He was CIO from 2002 to 2007, when he was replaced in that job by Christopher Perretta, who reports to Antonellis.

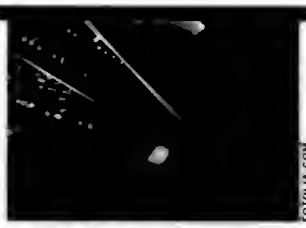
CYBERCRIME

Banks, Customers Feel the Fallout of Heartland Breach

IN A SIGN OF the scope of the data breach disclosed Jan. 20 by Heartland Payment Systems Inc., banks and credit unions from Maine to Washington state have begun reissuing credit and debit cards to customers.

There were also reports last week of fraudulent transactions involving cards that were compromised in the breach at Heartland, a large payment-processing firm in Princeton, N.J.

For instance, CU Community Credit Union in Springfield, Mo., said 16 compromised cards that it had issued were used to make about $11,000 worth of fraudulent purchases. "I haven't spoken to one financial institution that hasn't been affected by the breach," said Jenny Reynolds, the credit union's vice president of marketing.



Heartland has said intruders broke into its systems sometime last year and planted malware that they used to steal the card data. The number of compromised cards still isn't known. But Heartland processes more than 100 million transactions per month.

The Washington Credit Union League, a trade group in Federal Way, Wash., said some of its members have reported that more than half of their issued cards were compromised. The breach led the WCUL to push state legislators to revive a bill mandating specific data-protection controls for all merchants and third parties that process card transactions.

– JAIKUMAR VIJAYAN

INTERNET APPLICATIONS

Google Extends Gmail To Offline Users

GOOGLE INC. last week launched an updated version of its hosted Gmail e-mail service that lets users access their accounts without an Internet connection.

Joyce Sohn, a spokeswoman for Mountain View, Calif.-based Google, noted in a company blog post that the updated service would allow users to read, write and archive e-mail messages while flying in an airplane.

However, Sohn added, "we're still working out kinks, which means you might see some issues that aren't completely ironed out."

The new Gmail version uses the company's Google Gears browser extension to provide offline access. Google Gears has also been used to offline-enable Google Docs and Google Reader.

The company said that it plans to add offline access to its Google Calendar service as well.

"This is an important development in the evolution of Gmail," said Dan Olds, an analyst at Gabriel Consulting Group Inc. in Beaverton, Ore. "With offline capabilities, Gmail now has at least arguable parity with [Microsoft's] Outlook, which opens up an entirely new market to [Google].

"The addition of offline calendar functionality will move them into an even better competitive position," he added.

Olds noted that Gmail has been the system of choice for the casual e-mail user, and it has more recently become popular among people looking to create extra e-mail accounts.

The offline access could broadly expand Gmail's potential market, Olds said. "These offline features will make Gmail a viable option for small-business people who use Exchange, and it may eat into Microsoft's market share," he predicted.

"However," Olds added, "with Outlook being bundled with Microsoft Office, converting large numbers of users from Outlook to Gmail is still going to be an uphill climb."

— Sharon Gaudin

BETWEEN THE LINES *By John Klossner*

issued a "release candidate" version of its Internet Explorer 8 browser. But it didn't set a shipment date for IE8 or say whether Release Candidate 1 would be the final precursor.

Online research firm said the number of Internet users worldwide surpassed the 1 billion mark in December, the first time it has done so in any single month.

Michael Dell took back the CEO job at after the hardware vendor had foundered under Kevin Rollins, his handpicked successor.

Global Dispatches

Fujitsu Drive-Head Production Halted

TOKYO – Fujitsu Ltd. last week announced that it plans to end production of read/write heads for hard disk drives in March as part of a wider review of its drive business.

The move will affect about 360 employees at Fujitsu's factory in Nagano, Japan. Those workers will be reassigned to other operations within the Tokyo-based company.

Fujitsu said it will record a one-time facilities-related charge of ¥5 billion ($56 million U.S.) in the last quarter of 2008 because of the closing of the production operation.

Toshiba Corp., also based in Tokyo, has confirmed that it is in talks to buy Fujitsu's disk drive business.

Martyn Williams,
IDG News Service

Nokia Outsources IT Work to HCL

BANGALORE, India – Nokia Corp. has outsourced its internal desktop management and help desk functions in 76 countries to India-based outsourcer HCL Technologies Ltd.

HCL and the handset maker announced a five-year contract, worth an undisclosed sum, last week. As part of the deal, HCL has set up an office in Helsinki to provide onshore services to Espoo, Finland-based Nokia. It also will do work for Nokia from Poland, China, the U.S. and India.

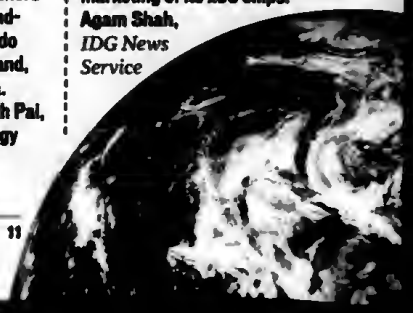
According to Siddharth Pai, a consultant at Technology Partners International Inc. in Houston, Indian outsourcers typically haven't been able to get desktop management contracts because they don't always have a global presence.

John Ribeiro,
IDG News Service

BRIEFLY NOTED

The Court of First Instance in Luxembourg has rejected a request from Intel Corp. to postpone a deadline in the European Commission's antitrust proceedings against the company, clearing the way for the EC's long-awaited ruling. The EC has charged Intel with anticompetitive behavior in the marketing of its x86 chips.

Agam Shah,
IDG News Service



INTERNET APPLICATIONS

Google Extends Gmail To Offline Users

GOOGLE INC. last week launched an updated version of its hosted Gmail e-mail service that lets users access their accounts without an Internet connection.

Joyce Sohn, a spokeswoman for Mountain View, Calif.-based Google, noted in a company blog post that the updated service would allow users to read, write and archive e-mail messages while flying in an airplane.

However, Sohn added, "we're still working out kinks, which means you might see some issues that aren't completely ironed out."

The new Gmail version uses the company's Google Gears browser extension to provide offline access. Google Gears has also been used to offline-enable Google Docs and Google Reader.

The company said that it plans to add offline access to its Google Calendar service as well.

"This is an important development in the evolution of Gmail," said Dan Olds, an analyst at Gabriel Consulting Group Inc. in Beaverton, Ore. "With offline capabilities, Gmail now has at least arguable parity with [Microsoft's] Outlook, which opens up an entirely new market to [Google].

"The addition of offline calendar functionality will move them into an even better competitive position," he added.

Olds noted that Gmail has been the system of choice for the casual e-mail user, and it has more recently become popular among people looking to create extra e-mail accounts.

The offline access could broadly expand Gmail's potential market, Olds said. "These offline features will make Gmail a viable option for small-business people who use Exchange, and it may eat into Microsoft's market share," he predicted.

"However," Olds added, "with Outlook being bundled with Microsoft Office, converting large numbers of users from Outlook to Gmail is still going to be an uphill climb."

— Sharon Gaudin

BETWEEN THE LINES *By John Klossner*

Microsoft Corp. issued a "release candidate" version of its Internet Explorer 8 browser. But it didn't set a shipment date for IE8 or say whether Release Candidate 1 would be the final precursor.

Online research firm comScore Inc. said the number of Internet users worldwide surpassed the 1 billion mark in December, the first time it has done so in any single month.

Michael Dell took back the CEO job at Dell Inc., after the hardware vendor had foundered under Kevin Rollins, his handpicked successor.

Global Dispatches

Fujitsu Drive-Head Production Halted

TOKYO – Fujitsu Ltd. last week announced that it plans to end production of read/write heads for hard disk drives in March as part of a wider review of its drive business.

The move will affect about 360 employees at Fujitsu's factory in Nagano, Japan. Those workers will be reassigned to other operations within the Tokyo-based company.

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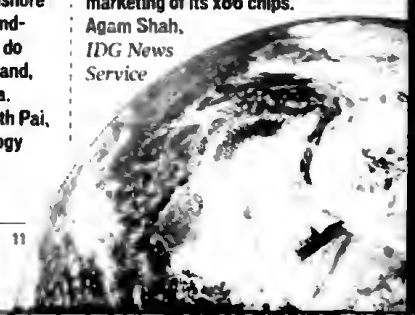

SCOTT MORGAN/GETTY IMAGES

Then-presidential candidate Barack Obama talks to health care research assistant Monika Johnson after introducing his plans to reduce health care costs at the Medical Education and Biomedical Research Facility at the University of Iowa on May 29, 2007.

Cost of Obama E-health Plan Could Reach $100B

But the former head of the federal e-health office estimates annual savings of $300 billion. By Lucas Mearian

A NATIONAL electronic health records system remains a first-term priority for President Barack Obama, but its price tag may far exceed current estimates, according to some health care experts.

"The magnitude of what we're going to need to do on the Obama scale is just incredible to think about, when you consider linking all these medical records across all these different towns, cities, states," said Charles Frazier, vice president of clinical innovation at Riverside Health System, a health care provider in Newport News, Va. "We have enough of a problem with that in our own health system."

During his campaign, Obama pledged to invest $10 billion per year over the next five years on an electronic health records program that would be designed to streamline workflow at hospitals, clinics and physician offices. Backers assert that EHR systems will improve care while significantly cutting overall health care costs.

Some experts said that Obama's initial estimates of the cost and time of implementation are likely far below what will be needed to create and roll out an EHR system across the U.S. Many said that the price tag could be closer to $100 billion and that implementation could take up to 10 years.

That initial plan called for funding the EHR system with part of an $825 billion economic stimulus package that the president hopes to push through Congress early this year. A White House spokesman said the e-health plan remains a key part of Obama's agenda, but he declined to disclose any details about the plan or its expected cost.

The administration of President George W. Bush launched an effort in 2004 to build a national EHR system and created the Office of the National Coordinator for Health Information Technology (ONC) to oversee the effort. Since then, the ONC has launched some pilot projects, but the e-health concept has been slow to expand beyond that.

For example, a survey of 2,700 U.S. doctors by the *New England Journal of Medicine* last July found that only 4% are using "fully functional" EHR systems. The rest, the journal found, are all still keeping mostly paper-based records.

However, David Brailer, who served as Bush's first health information czar, noted that 25% to 35% of the nation's 5,000 hospitals use or are in the process of rolling out computerized order-entry and medical record systems.

Brailer, now chairman of Health Evolution Partners, a San Francisco-based investment firm that specializes in funding health care providers, headed the ONC from 2004 until 2006. He was succeeded by Robert Kolod-

Continued on page 14

Your potential. Our passion.
Microsoft

Mediterranean Shipping Company has discovered a new form of energy.

Mediterranean Shipping Company (MSC) is the second largest container shipping line in the world with a database that tracks more than 210 billion transactions a year. The company recently upgraded its database to Microsoft SQL Server 2008 not only to handle the massive load, but also to simplify MSC's database administration and help ensure high availability. Which is like a new form of energy for MSC. See the whole story at **SQLServerEnergy.com**

Microsoft
SQL Server 2008

Continued from page 12

ner, who still holds the post.

Brailer said that implementing a full, secure EHR system is a multiyear — and very expensive — project. Such a system would include patient care order-entry systems, an ability to fill pharmacy prescriptions, and networks to share patient data among hospitals, primary care physicians and insurance companies.

He cited multiple studies that estimate implementation costs at between $75 billion and $100 billion. "Hospitals will have to make sizable, potentially multi-hundred-million-dollar budget commitments," Brailer explained.

However, he described the funding needed to implement the system as "a one-time cost in an industry that spends $2.2 trillion a year now and will spend $3.7 trillion per year 10 years from now. So it's a relatively small amount of money."

Brailer said a fully functioning national electronic health system could decrease U.S. health care costs by between $200 billion and $300 billion annually by cutting down on duplicate records, reducing record-keeping errors, avoiding fraudulent claims and better coordinating health care among providers.

Nonetheless, Brailer and others acknowledged that such market forces may not be enough to convince private practices and small, rural hospitals to move forward on EHR projects.

"Electronic medical records gut your organization, and everything you do will be different after it," noted Larry Garber, vice chairman of Massachusetts eHealth Collaborative Inc. (MAeHC).

The Bush administration did a good job of getting e-health standards and plans in place, said Charlene Underwood, who chairs the Chicago-based Healthcare Information and Management Systems Society, a trade group that promotes the use of IT systems in health care. But "it didn't move the needle forward on adoption," she noted.

Underwood, who is also director of government and industry affairs at Siemens AG's Erlangen, Germany-based Siemens Healthcare unit, suggested that the Obama administration should spend as much as necessary to create a system for monitoring hospitals and private health care practices to make sure that they are up to date with e-health technology and standards.

And hospitals employing order entry work systems for physicians, electronic prescription services or other e-health systems should be eligible for funding to continue or upgrade those services, she added.

A federal e-health effort should also require that health care providers implement standardized "evidence-based order systems" — electronic templates that spell out best practices for treating specific patient problems, Underwood said.

For example, a patient who leaves a hospital after surgery following a heart attack would automatically be prescribed aspirin as part of the postoperative treatment.

"We're trying to put in place evidence-based standards to reduce variation in care," Underwood said.

STATE-LEVEL EFFORTS

The ONC has had some success in getting state and local governments to support the creation of regional health information organizations (RHIO), which are designed to bring together health care organizations in defined areas and control their exchange of information. To date, 66 RHIOs have been created in the U.S., and many of them are now working to create electronic health records.

Massachusetts is one of 30 states that have introduced or passed legislation calling for the statewide adoption of standardized health IT systems. Under a law enacted last summer, Massachusetts wants 14,000 private physicians' offices to adopt EHR systems by 2012, and its 63 hospitals by 2014.

MAeHC, which is overseeing implementation of the state's three regional RHIO operations, projects that the process of creating a statewide EHR system will take two to three years and cost about $100,000 per physician, Garber said.

JudyAnn Bigby, Massachusetts' secretary of health and human services, estimated that implementing a statewide EHR program will cost about $340 million.

Some of the funding — about $25 million per year — will come from increased taxes on tobacco products. State officials also expect the private sector to chip in, Bigby added.

In addition to legislating EHR implementation, Bigby said, Massachusetts is developing payment models that would reward physicians who use the state's disease registries or other electronic medical support tools to care for patients.

She said the state also plans to evaluate whether it should use one of the various online EHR services, such as those offered by Google Inc. and Microsoft Corp.

Microsoft launched its HealthVault beta program in 2007 and has partnered with Kaiser Permanente and the American Heart Association, among others, to create a database accessible by patients and authorized care providers.

Earlier this year, Google launched a beta version of its online health records system, called Google Health.

Meanwhile, Duke University Health System is in the process of a five-year plan to roll out a $6 million EHR system, called HealthView Patient Portal, according to Asif Ahmad, CIO of the Durham, N.C.-based health care provider.

In the second year of the effort, Duke has moved to keep costs down by using already installed technologies to run an EHR system built internally using IBM's Java-based WebSphere development tools.

The health care provider may also use an online e-health system, Ahmad added, noting that it is in talks with Google and Microsoft. ■

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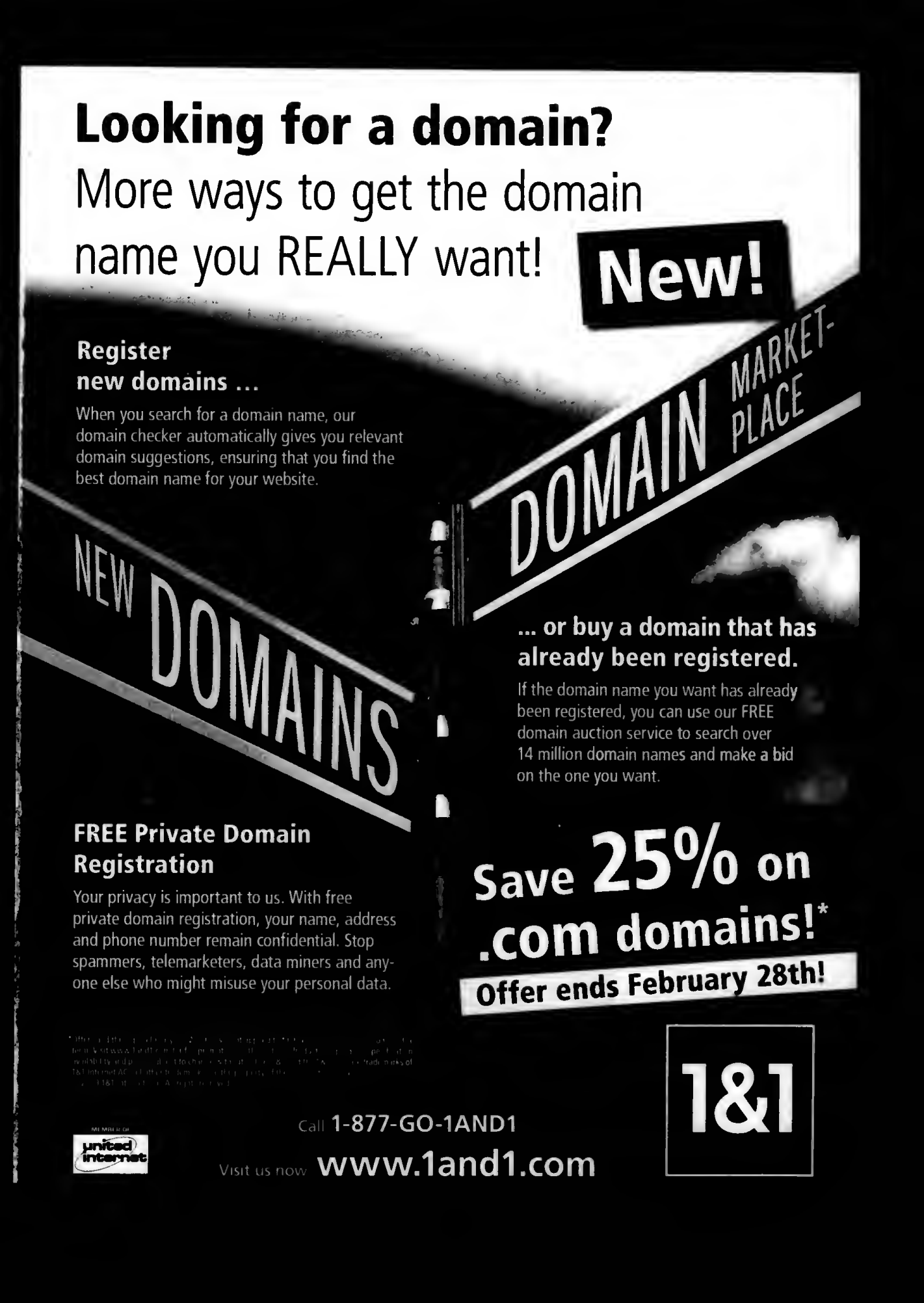
DAVID BRAILER, CHAIRMAN, HEALTH EVOLUTION PARTNERS



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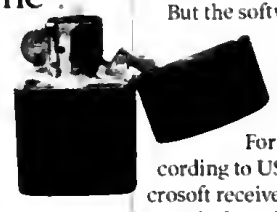
Microsoft Layoffs Add More Fuel To H-1B Fire

The vendor's job cuts have sparked a new round in the H-1B debate: Should visa holders be laid off before U.S. citizens are?



By Patrick Thibodeau

LAYOFF announcements by IT vendors came fast and furious over the past two weeks. But it was Microsoft Corp.'s that drew the attention of a U.S. senator, who said it was "imperative" that the company give job priority to U.S. citizens over foreigners with H-1B visas.

"Microsoft has a moral obligation to protect ... American workers by putting them first during these difficult economic times," Sen. Charles Grassley (R-Iowa) wrote in a letter to Microsoft CEO Steve Ballmer on Jan. 22.

Grassley, a vocal critic of the H-1B program, could have sent the letter to any of the vendors laying off employees — or to corporations with H-1B workers on their IT staffs. He likely singled out Microsoft because its chairman, Bill Gates, has called for an increase in the annual cap on visas during congressional hearings.

Microsoft, which plans to cut up to 5,000 employees over the next 18 months, said last week that a "significant number" of the first 1,400 people being let go are foreign workers who are in the U.S. on visas.

The software vendor wouldn't be more specific, though. And despite Grassley's demands, there are no federal laws that require companies to lay off H-1B holders before U.S. workers.

"In fact, the law is very well designed to say that you have to treat H-1Bs the same as U.S. citizens in all regards," said David Kussin, an immigration attorney at Pillsbury Winthrop Shaw Pittman LLP in New York.

Even Grassley appeared to acknowledge that point in his letter to Ballmer, when he wrote about Microsoft's "moral obligation." He didn't describe protecting U.S. workers as a legal requirement.

Microsoft won't disclose the number of H-1B workers on its payroll, and it's hard to get a complete picture of any company's visa use from the U.S. Citizenship and Immigration Services.

But the software vendor is considered to be one of the leading H-1B employers. For instance, according to USCIS data, Microsoft received approval for a total of nearly 2,300 visas for the federal government's 2006 and 2007 fiscal years.

In the statement that Microsoft released in response to Grassley's letter, the company noted that there is a "human impact" for all workers who are laid off, including H-1B holders.

"For many of the employees here on a visa, being laid off means that they have to leave the country on very short notice, in many cases uprooting families and children," Microsoft said.

Indeed, visa holders whose jobs are eliminated face some difficult decisions. Kussin said that as soon as H-1B workers lose their jobs, they technically "are no longer eligible to be in the United States."

In practice, newly unemployed H-1B workers may have a grace period, possibly as long as 60 days, to try to find another job. They also may be able to obtain a visitor's visa, provided they can show that they have sufficient funds to support themselves, according to immigration attorneys.

And even if an H-1B holder is forced to return to his home country after a layoff, he could still come back to the U.S. on his existing visa if new work becomes available before it expires, said Sarah Hawk, an attorney in the global immigration practice group at Fisher & Phillips LLP in Atlanta.

The Washington Alliance of Technology Workers, a Seattle-based union known as WashTech, is trying to determine how many H-1B workers are being affected by the layoffs at Microsoft. But, WashTech spokeswoman Priyanka Joshi said, "I know this is a secret they will try very hard to keep."

H-1B critics don't expect Microsoft, or any other company, to exclusively cut foreign guest workers before letting Americans go. But they see the ongoing layoffs as a clear rebuttal to the argument that more H-1B visas are needed to supplement the U.S. tech labor pool.

"If Microsoft doesn't state that they will lay off the H-1Bs first — and they won't — then it would be awfully tough for Bill Gates to come back to the Hill and urge an H-1B increase," said Norman Matloff, a computer science professor at the University of California, Davis. ■

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IN A LETTER TO MICROSOFT

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Jonathan Schwartz

Sun Microsystems' CEO talks about the **economy,** disruptive **technologies** and necessity as the **mother of invention.**

■ THE GRILL

Sun Microsystems Inc. CEO Jonathan Schwartz thinks that the economic downturn and the Wall Street meltdown will make IT managers more open to change than they have ever been before. And that is going to benefit Sun and its open-source strategy, contends Schwartz, who is also the company's president and a high-profile blogger.

What are you doing to help your customers with their economic problems? We are preconfigured for the downturn. If you think about the discretionary expenses that go into operating a data center, first and foremost there's the physical plant itself — the physical space, the power consumption, the HVAC. So all the work that we do around energy efficiency and on getting optimal performance — it's because the environment ends up being a huge operating expense for our customers. And to the extent that we can help them lower their environmental impact, we're also lowering the economic impact on their businesses. That's clearly Job 1.

The second element of discretionary expense is software licensing, and probably the single biggest license that customers have to buy is [for] proprietary databases. Second on that list are proprietary application servers and an application infrastructure. I just was with a customer who didn't recognize that he had roughly 2,000 developers working with MySQL because it wasn't a purchase standard [in his organization] — but it had become the de facto [database] standard. He didn't recognize that he could get that level of productivity [from an open-source database].

Continued on page 20

Dossier

Name: Jonathan Schwartz

Title: CEO

Organization: Sun Microsystems Inc.

Location: Santa Clara, Calif.

Best books read last year:

■ ***Empires of Light*, by Jill Jonnes, "a really entertaining history of electricity, its discovery, generation and distribution around the world. Clouds – and computing, broadly – have parallels to that history."**

■ ***The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*, by Marc Levinson, "about the expansion of free trade made possible through the standardization of shipping containers, which again has a great parallel to our industry."**

■ ***Mountains Beyond Mountains: The Quest of Dr. Paul Farmer, a Man Who Would Cure the World*, by Tracy Kidder, which "reminds you what's truly important."**

Favorite nonwork activity: Cooking and eating, with friends and family.

Philosophy in a nutshell: "The harder you work, the luckier you get."

Fantasy dinner party guests: "Larry Ellison – I'd love to have him over. We both love databases; we'd have a lot to cover. I'd even cook. Heck, that's probably unrealistic.

"I guess I'd love to have dinner with John Maynard Keynes, Steve Martin, Alice Waters and all three of this year's Nobel laureates in physics. Alice cooks, Steve picks the wine, we all learn about broken symmetry."

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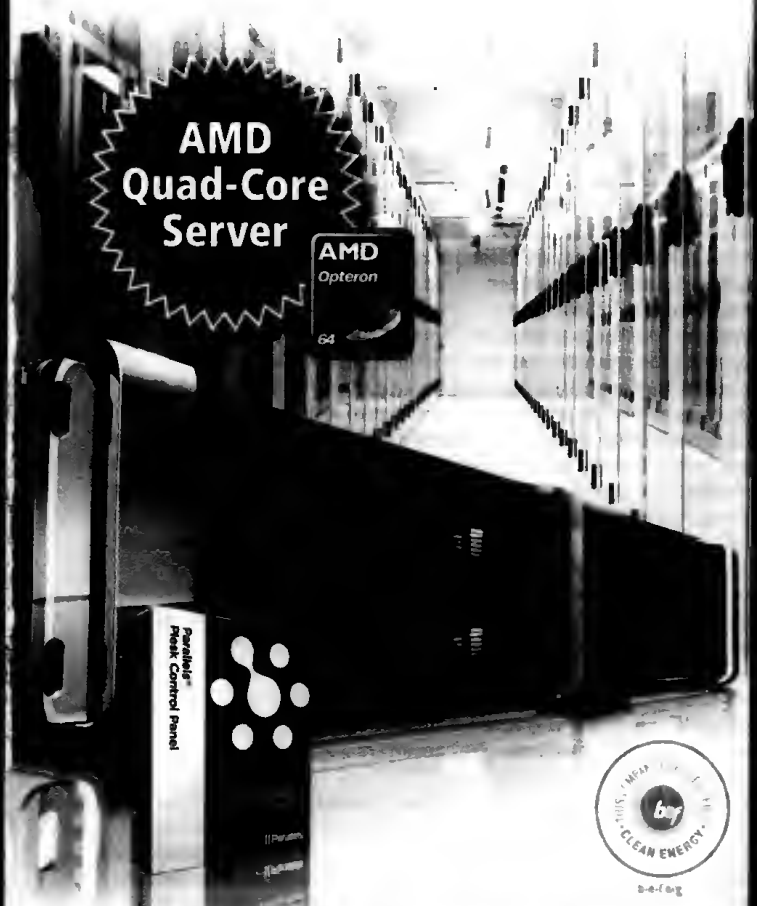

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Continued from page 18

The same is true for the application server marketplace. OpenSolaris — now that it is multivendor and multiplatform and the source [code] is available, those environments where you don't need support don't have to pay for it. And then we enable customers that want to subscribe in production environments to pay for the supported version.

With the economic downturn, do you really expect customers in the near term to, say, swap out an Oracle database and replace it with MySQL? Unquestionably. Now, that doesn't mean they are leaving Oracle — Oracle is a fantastic company, and they've built a fantastic database. But there is no longer one-size-fits-all in the enterprise database marketplace.

In your blog, you talked about aggressively expanding your customer base. How does the new four-socket Sparc Enterprise T5440 help you do that? It's a little unlikely that this server is going to be the first system that a new customer buys from Sun. I don't want to close off that option, [but] it's more likely that they pick up a one-socket Niagara system. Just on price point, you seldom spend $50,000 to $100,000 on your first server, and that's the price range that these [new] systems start at.

Niagara as a whole, though, gives us access to a market that really is representative of a unique problem space. We don't see IBM with [its System p line] at all in the Niagara space. What brings new customers to Sun is differentiation and innovation. [They] want to be 50% faster, or 50% more energy-efficient, or half the size. Those things, when added up across really large data centers, mean real money to real customers.

Sun fosters a reputation as a disruptive company, from a technology standpoint. But what will it mean to be disruptive going forward? You want to be careful. You want to be disruptive to the industry; you don't want to be disruptive to your customers. I'll give you a great example of the kind of disruption that the market is going to see from Sun in the next 12 months. We have been very aggressively promoting OpenSolaris in the marketplace, and there are a lot of storage vendors that have been really excited to embrace open-source operating systems — so long as they stay on servers.

As you have seen with Thumper — a 48TB storage platform based on the ZFS file system — we're planning on taking Solaris and extending all the skills and knowledge and ecosystem that we built in our server business to our storage business. That now means open-source platforms will be at the heart of open storage as it evolves as a market category, and we plan on being a leader there. That's very disruptive to the competition.

What role does FUD – fear, uncertainty and doubt – play in the server market these days? I'm asking this because Linux advocates don't seem to miss an opportunity to explain why that operating system will crush Solaris at some point. How do you counter that? We don't pay a lot of attention to that; we pay a lot of attention to customers. We are very well aligned with the Linux community. We're not the enemy of one another — and I know there are folks who get emotional about that now and then. But our focus is going after the proprietary vendors that are causing our customers a lot of grief and a lot of pain. And the more we focus on solving those customers' problems, the more they embrace open source.

Some people think that the current economic problems will accelerate the adoption of software-as-a-service technologies. What are your thoughts on that, and how are your products going to line up to support SaaS? Customers under stress are open to change. And that is what I see from every customer I've spoken to, especially [lately]. That means they are open to change in moving away from proprietary software vendors and proprietary storage vendors, more open to moving to software as a service, more open to moving to free software — and that, again, creates opportunity for Sun. I think the doors are going to be more open in the next year than they have ever been.

Where is this innovation going to come from? The fear is that investment dollars will dry up. Innovation rarely arises in a bubble. Someone clever once said that necessity is the mother of all invention, so believe me, people are becoming a lot more innovative as I speak. Why? Because they have to. If your budget just got cut 50%, I promise you, everything is on the table. There is no better time to start a company than right now. It may be tough to find funding, but there is no better time to go look at the parade of legacy technologies that need to be replaced and the extraordinary interest from customers in entertaining new ideas.

If that's true, are you considering any changes in where your research dollars are being spent? In general, we're looking at ways to increase R&D. That doesn't mean across everything. It means to double down on those parts of the market that really represent clear revenue return. Coming back to the T5440 — although [the Niagara platform] is more than a billion-dollar business, you have to remember that [work on] the first silicon began in 2001. R&D takes patience, discipline and rigor. We're not going to make changes within the quarter or within the next six months that are just going to be episodic or ephemeral changes because there was a downturn.

— *Interview by* **Patrick Thibodeau**

■ OPINION

Sharon Machlis

Innovation and The 20% Solution

As IT budgets threaten to follow the same trend lines as financial markets, it's a natural impulse for managers to circle the wagons, concentrate on core projects and put off innovation for another day. Natural, but wrong.

For proof, look at what happened after the Internet bubble burst earlier this decade. Sure, that tech bust pales in comparison with the current worldwide credit crunch in terms of overall effect, but if you consider the Internet sector alone, the money drought and corporate failures were pretty stunning.

So, how did Google emerge from that wreckage to become not another Pets.com, but a multibillion-dollar company and the world's most influential Web brand? A key part of the equation has been constant innovation (either in-house or by acquisition). It's not easy to innovate when money is drying up all around you. But Google managed to do just that during those lean years.

One important policy has increased both employee satisfaction and innovation at Google: the "20% rule," which allows engineers to spend one-fifth of their time on corporate projects of their choosing — creating something new or making something work better — even if the project isn't part of their job descriptions.

For one day each week, Google's engineering staffers get to work on projects *they* think are important for the business, not what management has prioritized for them.

Before you scoff at that as a tech-bubble luxury that only an overstaffed company can afford, look at some numbers. Google's AdSense for Content was developed as an engineer's "20% time" project. Last quarter, Google generated more than $1.6 billion in revenue from AdSense partner sites; that's almost one-third of the company's total revenue.

■ Google's AdSense for Content was developed as an engineer's '20% time' project. Last quarter, it generated more than $1.6 billion in revenue.

A few other companies have similar policies that have yielded noteworthy results. 3M's "bootlegging" rule allows research engineers to spend up to 15% of their time on projects of their choice. One well-known outgrowth: Post-it notes.

What the 20% rule has done at Google is turn a significant chunk of the company into something akin to a venture-capital innovation laboratory, but without outside funding to seed the work.

"There is a big difference between pet projects being permitted and being encouraged," Google software developer Joe Beda wrote several years ago on his blog. "At Google, it is actively encouraged for engineers to do a 20% project."

Beda outlined aspects of the environment that makes 20%-time success more likely, such as a single code base that makes it "really easy to look at and contribute to code in other projects without having to talk to anyone, get special permissions or fill out forms in triplicate," and a culture of transparency so teams share "the most intimate details of their project."

Only exceptional managers are going to buy into the idea that their most valuable assets — their people — will be available for company-directed work just 80% of the time. And there have been some rumblings on the Web that Google's 20% rule has come under pressure, especially if main projects are falling behind schedule.

It will be interesting to see whether Google's 20% rule can survive the current downturn. The company said earlier this month that it's shutting down a number of fledgling, experimental Web products and services.

Some of those decisions made a lot of sense, such as ending user uploads at Google Video (hardly needed, now that Google owns YouTube). Some other promising services that were shuttered — such as a mashup editor that had been in "limited private beta" — may have been victims of the down economy.

But great things *can* happen when tech workers in the trenches can spend time pursuing their own ideas. Even when budgets are tight. ■

Sharon Machlis *is the managing editor of* Computerworld.com. *You can reach her at sharon_machlis@computerworld.com.*

■ COVER STORY

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BELLE MELLOR

As an IT professional, you don't often have the luxury of going with the flow. With businesses everywhere seeking both efficiencies and revenue growth, IT's mission is increasingly geared toward implementing and even spearheading many types of change.

That's never been more true than in today's economic climate. "Where do we think productivity is going to come from? From technology," says Charles Beard, CIO at San Diego-based Science Applications International Corp.

In a Gartner Inc. survey of 1,500 CIOs worldwide earlier this year, improving business processes was identified as the No. 1 priority for CIOs. And in a late-2008 survey of 100 IT leaders conducted by CIO Connect, an independent networking forum for top CIOs in the U.K., 62% of the respondents said that their board-level colleagues were increasingly turning to them for insight and leadership in the area of business change.

But as experienced IT leaders can tell you, it's not easy being an instigator of change. Even though as CIO you're in a good position to recognize processes that should be improved, people might not want to listen to you, especially when you're challenging long-held beliefs.

That's why Bogdan Butoi, director of sales operations at Animas Corp., a West Chester, Pa.-based maker of insulin pumps, wears his politician's hat when he questions processes that his business counterparts take for granted. It helps, Butoi says, that he's naturally rebellious. "It's always a challenge to me when people say, 'This is how you *have* to do it,' " he says.

At the same time, he knows there's nothing like the suggestion of change to raise one's blood pressure, so he has learned how to approach people in a politically correct way.

We spoke with Butoi, Beard and others to get tips on how to recognize and propose business change in a way that gets results. Here's what they said:

[By Mary Brandel]

Pinpoint processes worth changing.

There's no sense in even getting started if the business process you're targeting for change won't yield adequate payback, either in return on investment or reduced costs. To find opportunities, either look for processes that run more slowly than others across the entire organization or those that slow down within a particular department, says Ron Bonig, vice president and CIO at George Washington University.

For instance, if one department regularly requires much more time than others to complete the hiring process, that might signal a problem. Similarly, if there are two processes that cross two departments — say, hiring and benefits management — but one runs much slower than the other, that's worth exploring.

Then consider the payback for fixing it. "A 5% problem to one department is not a big deal, but if it's a 5% problem to everyone in the organization, that could be a lot of money," Bonig says.

Use the whiteboard.

It's important for you and your staff to thoroughly understand the problem you detect in the process before proposing any changes. This doesn't come naturally to many IT people, who tend to go with their gut instinct when it comes to offering solutions, says Bonig. "People out of grad school in computer science and engineering — even though they should have learned the scientific method — shoot from the hip instead of fleshing out the who, what, where, when and why," he says.

To counteract that tendency, Bonig has his staffers write down everything they know about the problematic process on a whiteboard. He compares the technique to the one used by doctors on the TV show *House*. "That's a great way to get to an answer, whether you're dealing with a problem or a new process or a manager who doesn't know how to approach a problem," he says.

Let the person you're addressing be the expert.

IT enjoys a privileged view into cross-organizational processes, and because it operates above the individual silos

that make up the enterprise, it can see where processes bog down. At the same time, you have to give managers the benefit of the doubt that they know what they're doing, Bonig says. So once you've pinpointed an inefficient process, treat the manager you're addressing as the expert, whether you view him that way or not. Rather than calling the process "broken," choose phrasing that will be more palatable to the manager. Bonig suggests "rust in the process," "an opportunity for fine-tuning" or "the need for a lube job."

However, feel free to emphasize that while the IT department may not be the expert when it comes to that particular department's operations, it is the expert when it comes to analysis.

Ask, don't tell.

Change means more work for everyone involved, so when it comes to hearing news about the need to make an adjustment, people are more open to suggestion, dialogue and debate than they are to lectures and pontificating, says Laura Gorman, a consultant at Ouellette & Associates in Bedford, N.H., and co-author of *Leading IT Transformation* (Kendall Hunt Professional, 2008).

Although it might be tempting to show off everything you know or demonstrate your enthusiasm for changing a process, she suggests leading with questions, not answers. That way, "when people don't have the answers to your questions, it naturally shifts their thinking," Gorman says. Remember, the point is to gain the manager's commitment, not coerce him into accepting your view of the situation, she says.

The purpose behind the questioning, Bonig says, should be to unearth the logic behind the person's assumptions, not to make him uncomfortable. "You need to question their assumptions, not to be obnoxious, but to see if there are holes in their reasoning," he says.

Get the facts.

Keep in mind that the manager will likely resist the idea of change, even if your line of questioning is perfectly on target. Business executives speak a language that's based on facts, so if you want to be heard, load the conversation with hard evidence, suggests Beard. "A case based on the hard facts is the best approach," he says.

The secret, says Butoi, is to present such a strong case "that there's no way they're going to come back and say no — or if they do, they'll need to come up with a good argument."

For instance, a department head might tell you there's no need to implement an automatic lock on her department's computers because her staffers log off or lock their computers every time they walk away from their desks, and they lock their laptops in drawers or take them home every night.

All you need to do is walk around after hours with a camera, taking pictures of the unlocked computers or the ones left on users' desks, Butoi says, pointing out that "a picture is worth a thousand words."

If you repeat this for a few days and catch several people being noncompliant, you'll show that the manual process — as strong as it looks on paper and as much as it is emphasized in training — does not work.

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"A 5% problem to one department is not a big deal, but if it's a 5% problem to everyone in the organization, that could be a lot of money.

RON BONIG, CIO, GEORGE WASHINGTON UNIVERSITY

Long Time Coming

Change can take time.

George Washington University CIO Ron Bonig worked for two years to improve various processes for inputting student data.

The problem was that the information wasn't standardized. A recruiter at a college fair might type "Tom Smith" in the original student record; the student himself might type, "Tommy Smith" when visiting the Web site; the admissions department might input "Thomas S. Smith" when he was formally accepted; and test scores might arrive under "Thomas Smith."

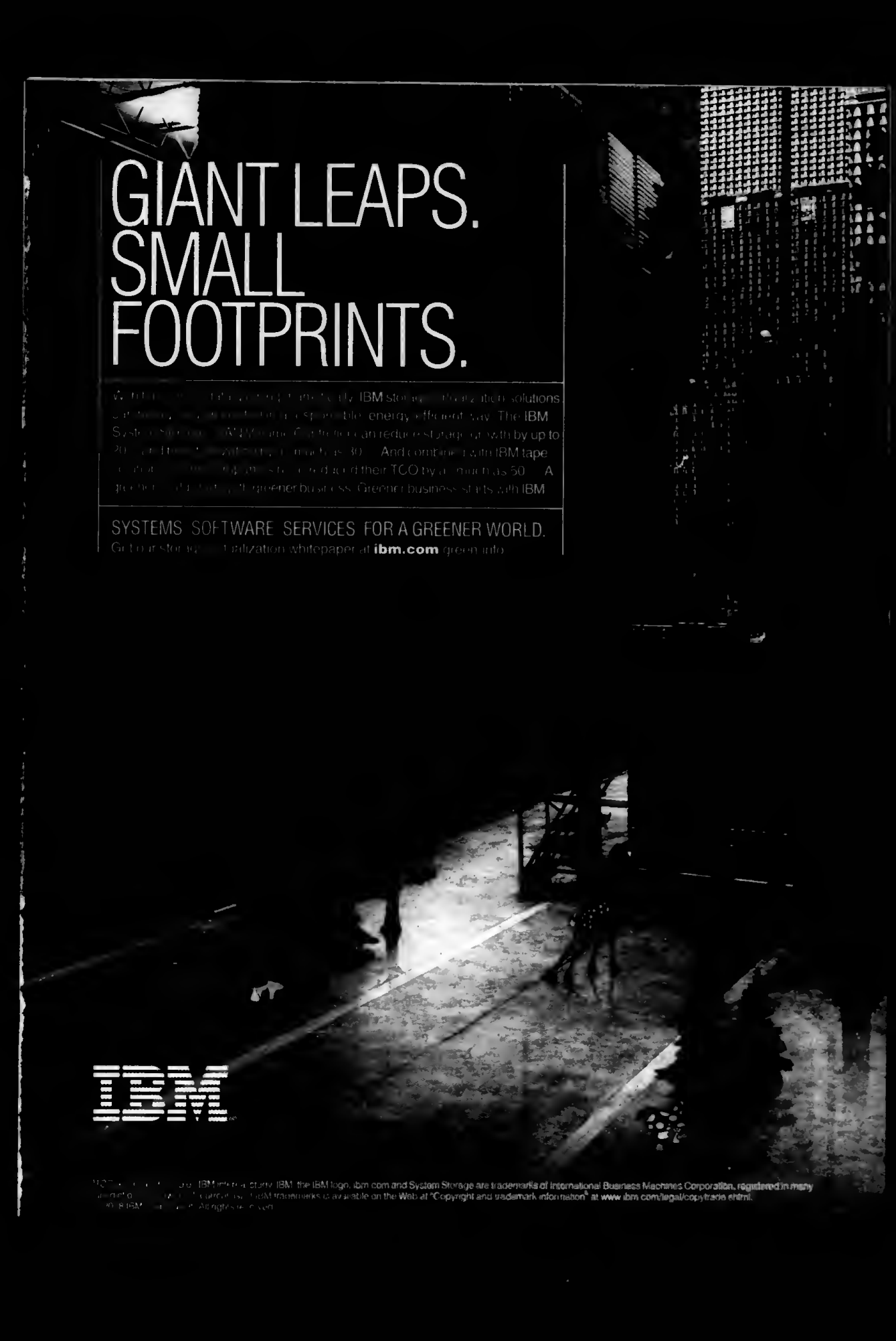
The various systems saw the same individual as several distinct IDs. "So if they looked up 'Tom Smith,' they'd think he hadn't registered, but if they looked up 'Thomas Smith,' they'd think he hadn't paid his bill," Bonig recalls.

The biggest challenge was getting departments at the front of the process to care about the problems on the back end, he says. After all, the goal in undergraduate admissions is to increase the number of students registered, not improve the accuracy downstream. "The whole reward mechanism was built on a silo," he says. "It would cost them to correct the problem, but they'd see no benefit."

IT decided to use the "good citizenship" argument, convincing key people, including the senior vice president involved, that the problem would lead to unhappy students down the road, which could result in decreased enrollment. To draw in the senior executive, Bonig collected plenty of evidence, including the number of customer problems, which was in the hundreds per week, as well as three of the most egregious examples of how the data discrepancies affected current students.

IT finally succeeded in its educational efforts and provided users with a program and a process by which student information is cross-checked and standardized.

– MARY BRANDEL



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Time Well Spent

A recent survey reveals that CIOs spend 17% of their time doing things outside of IT, including talking informally and formally with top executives on business strategy and transformational change.

Business strategy	55%
Transformational change proposals	54%
Issues related to business profitability	39%
Project briefings and program status updates	39%

SOURCE: CIO CONNECT SURVEY, NOVEMBER 2008; MULTIPLE RESPONSES ALLOWED

Continued from page 24

Make it personal.

As Bonig's example shows, different constituents are driven by different incentives, and it's up to IT to identify what makes the various parties tick. For instance, don't assume that a key stakeholder will be moved by the idea of gaining efficiencies; he may not care much about efficiency if his processes meet his other requirements, especially the ones that show up on his performance review.

As Gorman puts it, the challenge is to turn information into information that can't be ignored. To do that, you need to understand what motivates the people you're trying to influence, she says. What are they rewarded for doing? What are they held accountable for? For instance, while senior leaders want to know the facts, other employees may be more interested in how they're going to get their jobs done.

"If someone can't speak to them in a way that ignites a fire under them, they'll have no energy to direct toward your initiative," Gorman says.

There are two ways to make an effective appeal, she says. Either create a "burning platform," painting a picture in which the status quo is so risky that people are willing to jump into the unknown, or describe a future state that is so opportunity-filled that it creates dissatisfaction with the here and now.

Beard prefers to find what he calls "rallying points," or common interests that serve both users and IT. "If I can tie it to their performance objectives, that's even better," he says.

Find allies.

If key constituents are unapproachable or uncooperative, Gorman says it's important to identify other people who will support the effort and even advocate for it. These could include an employee who has no formal standing in the organization but who has lots of influence on the people he works with.

This is a good strategy when you meet resistance at a high level, Butoi says. He also suggests that you can sometimes avoid high-level resistance altogether by identifying someone within the department who will get on board and broach the idea with the manager himself, making it seem as if the idea was generated from within the department, rather than from IT.

Another difficult scenario is when there are no quantifiable benefits to present, as in the case of a project that promises to improve compliance.

In those situations, you don't want to walk into a board meeting without first establishing allies in the room. "Those are the moments where you have to get people to buy into your vision before you get to the table," Butoi says.

That's what he did earlier this year. He wanted to suggest a process change that, with minimal investment, would enable the company to reach its goal of strong double-digit growth without increasing head count. Butoi first presented his idea to several people and won them over, so when he walked into the meeting, he had already gotten four of the nine attendees on board. "I got immediate buy-in," he says, so he was able to launch the project in a couple weeks' time.

"It's always a challenge to me when people say, 'This is how you *have* to do it.'

BOODAN BUTOI, DIRECTOR OF SALES OPERATIONS, ANIMAS CORP.

Watch your timing.

And speaking of time, Butoi warns that there will likely be moments when you'll need to back off temporarily. In his recent process-change proposal, for example, Butoi knew that he might be faced with board members who simply didn't believe that his proposal would work. If that had been the case and he had pushed, he says, "rather than winning them, they'd end up more against the project."

Instead, Butoi says, if you hit strong resistance, rather than digging in, detoxify the situation by acknowledging the questions and promising to go back and restudy the numbers. "If you push it, you're never going to win," he says.

Learn how to negotiate.

One last piece of advice from Beard is to develop your negotiation skills, either on your own or through formal training. He points out that some MBA programs now teach negotiating skills, and many training firms offer seminars on the subject.

There's nothing easy about change, but CIOs worth their salaries know that they sometimes need to push the envelope on people's comfort. As Bonig says, "Someone who's willing to take on new things and challenge the status quo makes a good CIO." ■

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"If I can tie it to their performance objectives, that's even better.

CHARLES BEARD, CIO, SCIENCE APPLICATIONS INTERNATIONAL CORP.

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Why Every IT Woman Can Benefit From a Peer Network

Finding a group you identify with can lead to immeasurable career and personal gain.

By Gail Farnsley

WHEN I started college at Bowling Green State University in the fall of 1978, I was among a large group of women majoring in computer science. Although today there are far fewer women nationwide who choose that field, at the time, about 40% to 50% of the students in my class were female. The women's movement was alive and well, and the demand for computer programmers was so high that employers didn't care what gender you were. The year I graduated, computer science programs nationwide reported record numbers of female graduates.

The climate for women in IT remained strong as I entered the field as a computer programmer in the early 1980s. As I worked my way up the IT chain, however, things began to change. I discovered that I was among only a handful of women in the top ranks, and it wasn't uncommon to be the only woman in a meeting. I began to notice that I didn't have the same type of camaraderie with my male co-workers that I once shared with my female co-workers. I could still share ideas with men, but there were some topics I didn't feel comfortable discussing, such as juggling child care responsibilities or finding time to work out at the gym. I figured this was just one of the prices that had to be paid for success in IT.

Despite this, I neglected seeking out the company of other women in the field. I figured I simply didn't have the time, and my career felt so stable that I never thought I might move to a different company or pursue a new field. But several years later, I was introduced to the concept of peer networking and the power it could hold for women. There are a variety of ways to network, and I've become familiar with a few specific types. Here's a look at the benefits they offer.

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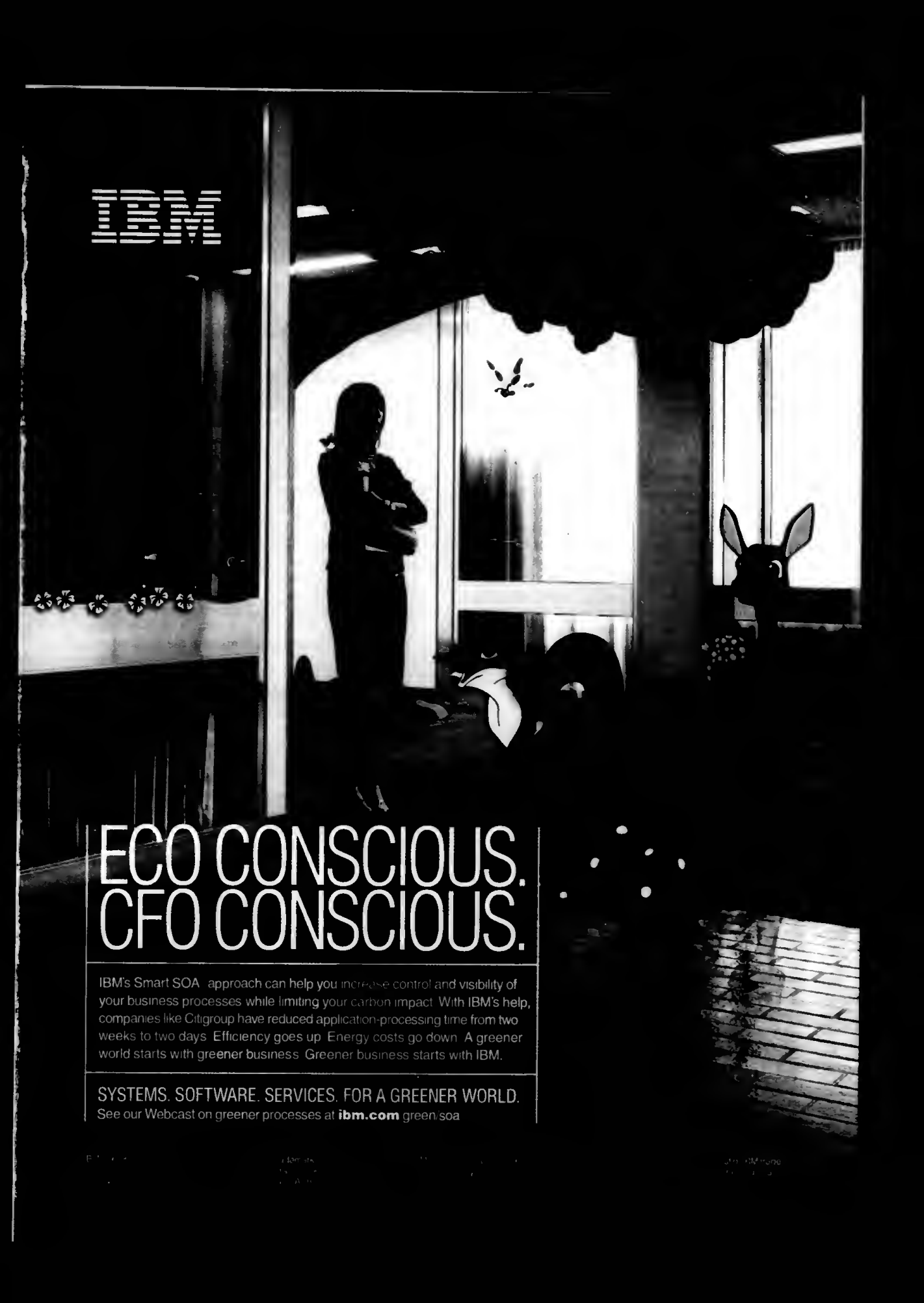
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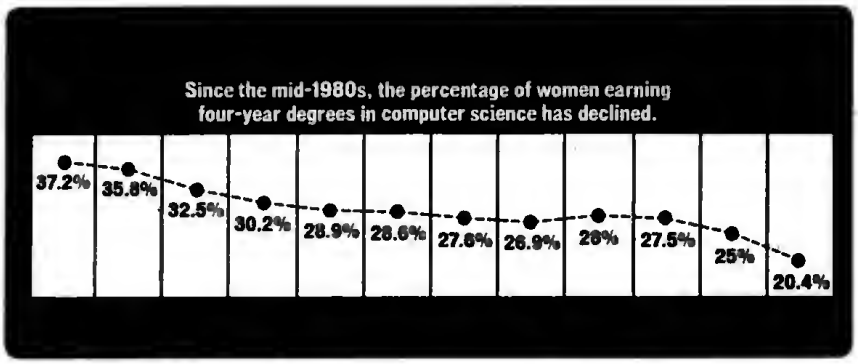
1 FORMAL NETWORKING GROUPS. These organized groups meet regularly and provide a career-oriented agenda and an excellent way to make contacts in the industry. There are a variety of local, regional, national and international IT groups from which to choose. I belong to Women in Technology International and a central Indiana group called Women & Hi Tech. Joining formal groups allows you to meet amazing and powerful women and hear from some of the top female leaders in the field. The leadership opportunities within such groups are also a great benefit. Any formal networking group is worthwhile, but groups designed for women explore topics from a female point of view. Subjects such as how best to create a work/life balance if you're a 70-hour-a-week CIO often take on an entirely different meaning for women than they do for men.

2 INFORMAL NETWORKING GROUPS. These aren't part of an established organization and can meet on whatever schedule the members choose. I'm part of a group that formed unexpectedly when one of the members was writing an article about high-powered women in IT. She wanted to get a group of senior women in IT in Indianapolis together to talk over dinner, and we enjoyed the conversation so much that more than six years later, we still meet and have invited other women to join in. We don't have an agenda; we talk about anything on our minds — jobs, dreams, families, hobbies, whatever. Some members are still in IT, and some, like me, have moved to other careers. The members have all been in the trenches and can understand the challenges, frustrations and rewards of CIOs. We feel comfortable sharing ideas and getting advice on jobs and even on how and why to change careers. I can't tell you how important my group was to me when I made my latest career change from CIO to professor. Even though we are all busy professionals, we make our dinner meetings a priority.



3 AFFINITY GROUPS. These types of networks are made up of people at your company who share a common interest, not necessarily the same type of job. When I was vice president of IT and CIO at Cummins, I led a group that included all the women from the company — executives, managers, programmers, human resources professionals, marketers and secretaries. I had the opportunity to connect with women I might never have met in the course of my job as an executive. Recently, I was reconnected with a marketing and HR employee at Cummins whom I'd met in the affinity group, and thanks to her, we are helping to develop a science camp co-sponsored by Purdue University and Cummins. Affinity groups also allow women who don't have management roles to take on more responsibility in the organization. These groups can be especially beneficial to those looking to move into a different assignment in the company or perhaps a different career. Even if you have no intention of leaving your job, affinity groups make it easier to make contacts on the inside to share ideas and get things done.

4 ONE-ON-ONE MENTORING. Even though a mentoring relationship isn't really a peer network, I would highly recommend having a mentor or being a mentor. Each is rewarding in its own way, both personally and professionally. I've served as a mentor to both men and women through the years — in formal and informal capacities — and am still contacted by young people seeking career advice. In fact, one of the reasons I decided to make the career move to academia was to have the chance to work closer with, and offer my insights to, young people.

Oddly enough, although I've had several mentors, none has been a woman. One of the most significant was a male high school teacher who taught a computer class. I worked for him grading papers (he was legally blind). He had worked at IBM in the 1950s and was always talking about how computer careers were rewarding and lucrative. He convinced me that computers would be a good career for me. That led me to reject my guidance counselor's advice to go to vocational school, and instead I applied to college. He even helped me with the application and financial aid process. Without him, I wouldn't be where I am today.

Although many women in IT — especially in the upper ranks — have very little spare time, I've found that peer networking is worth the time you invest in it. I've always felt that I get much more out of networking groups than I put in.

My advice as a former CIO is simple: Seek out groups, and if you don't find one you like, start one of your own. Being part of a peer networking group might be the best career move you ever make. ■

Farnsley, *formerly vice president of IT and CIO at Cummins Inc., is a visiting professor in the Department of Computer and Information Technology at Purdue University. She was named one of* Computerworld's *Premier 100 IT Leaders for 2008. She can be reached at gfarnsley@purdue.edu.*

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■ QUICKSTUDY

High-Density Storage

What happens when we hit the theoretical wall? Read on. By Russell Kay

THE FIRST storage media — paper tape and punched cards — were inefficient, slow and bulky. These gave way to magnetic storage: core memory, drums and, finally, hard drives. For backup, there were removable media: magnetic tape reels and cartridges, floppy disks and removable hard drives. Then optics (CD-ROM and DVD drives) supplanted magnetism for archival uses. Today's computers need to store more data than ever. The most recent storage generation replaces moving parts with solid-state electronics.

Through all this evolution runs a constant thread: Storage got faster and it got smaller, packing more data into less space. We measure this storage density (also called areal density) in units of bits per square inch (or bit/in.²). The increase in density over time, particularly with magnetic media, has been remarkable; the cost-effectiveness is astronomical.

A hard drive with a density of 329Gbit/in.² was just announced by Seagate Technology LLC. For perspective, researchers believe that 1Tbit/in.² represents the theoretical limit for current magnetic storage, and we may approach that limit in just a few years. What happens when we hit the wall?

Where do we turn for more storage? A number of technologies that could help are under development.

LONGITUDINAL VS. PERPENDICULAR MAGNETIC RECORDING

In longitudinal recording, magnetic data bits are aligned parallel to the disk surface, following concentric tracks. This limits storage density to 100 to 200Gbit/in.² or so. Perpendicular recording, introduced commercially in 2005, puts data bits in a vertical magnetic alignment that is perpendicular to the disk surface; it's as if the data bits are standing up rather than lying down.

Normally, the amount of magnetic material used to record a bit must be sufficiently large to retain its polarity so that it can't be accidentally reversed. Perpendicular recording allows the use of finer-grained material in which it's more difficult to reverse the magnetic orientation. Thus, perpendicular recording permits physically smaller bits; theoretically a density of 1Tbit/in.² would be possible.

Definition

High-density storage packs more data into less space. As current hard drives begin to approach their theoretical density limits, new technologies promise continued evolution.

HEAT-ASSISTED MAGNETIC RECORDING

Still in the research stages, HAMR uses a laser to heat the storage medium while writing to it. It uses a different type of recording medium than conventional magnetic technology. That new medium is often an iron-platinum alloy. This allows much higher storage densities (potentially up to 50Tbit/in.²) but requires the application of heat to change the magnetic polarity in the area that delineates each bit.

PATTERNED MEDIA

Regular magnetic disks store each bit across several hundred grains of magnetic material. With patterned media, photolithography lays down a uniform grid of small magnetic cells, each storing one bit in less space, permitting higher storage density.

In 2007, Fujitsu Computer Products of America Inc. achieved a storage density of 1Tbit/in.² using this method.

MAGNETIC MEDIA: Denser and Cheaper

DATE	DISK TYPE	DRIVE CAPACITY	AREAL DENSITY	COST/MB	COST/GB	DENSITY IMPROVEMENT OVER RAMAC	RELATIVE COST IMPROVEMENT OVER RAMAC
1956	IBM RAMAC	5MB	2Kbit/in.²	$10,000	$10 million	Not applicable	Not applicable
1980	Typical Western Digital	4MB	12Mbit/in.²	$25	$25,000	6,000 times	400 times
2009	Typical high-capacity hard drive	1TB	200Gbit/in.²	$0.00015	$0.15	100 million times	75 million times

We're familiar with Moore's Law, which holds that transistor density doubles every two years. Kryder's Law, credited to retired Seagate Chief Technology Officer Mark Kryder, states that magnetic disk density doubles annually. This appears to have held true over the past decade.

HOLOGRAPHIC STORAGE

This has been just around the corner for several years, but in 2009 it may finally come to market from In-Phase Technologies Inc. Three-dimensional holographic images store more information in less space by recording not only on the surface of the storage medium, as do other technologies, but also within an entire volume of space in the medium. (Technically speaking, we should properly measure holographic storage density in units of bits per cubic inch, but that's not yet a common usage.)

Holograms are created by splitting a single laser light into two beams: One is a reference and another carries the signal. Where the reference beam and the data-carrying signal intersect, the interference patterns are recorded in a light-sensitive storage medium. (Initially, this physical storage device will be a DVD-size disk.) Because multiple beams can be used at different angles, hundreds of unique holograms can be recorded in the same volume of material. In one sense, this is similar to a dual-layer DVD, except that it contains hundreds of layers, each recorded at a different angle so that they are not parallel to one another. The stored information is reconstructed by deflecting the reference beam off the hologram and projecting it onto a detector that reads an entire data page (more than 1 million bits) at once.

The first commercial units are expected to use disks with a capacity of 300GB. A real advantage of holographic storage is that its transfer speed (160MB/sec.) is far higher than the speeds other optical media can deliver.

SOLID-STATE DRIVES

These use on-chip RAM or flash memory that emulates a hard drive. With no moving parts, solid-state drives are silent and sturdy. With no mechanical delays, they usually provide fast access time and low latency.

StorageTek developed the first modern SSD in 1978. M-Systems (now owned by SanDisk Corp.) introduced keychain-size, flash-based solid-state drives in 1995; these are now used successfully as replacements for hard disk drives, and as convenient backup and data-transfer devices (often called thumb drives).

These days, smaller SSDs are commonly found in mainstream consumer netbooks and subnotebooks, while SSDs capable of holding 100GB or more are available at high prices. ■

Kay *is a* Computerworld *contributing writer in Worcester, Mass. You can contact him at russkay@charter.net.*

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Femtocells: Pros and Cons

Is it time for your own 'personal cell-phone tower'? By Ed Sutherland

ARE YOU one of those unlucky souls who enjoys decent cell phone reception when you're out and about but can't get a signal inside? You're not alone. Indoor signals have long been a weak point of cellular coverage.

That's why femtocell technology has created such a stir over the past year or so — it offers the possibility of using a device like a broadband router to boost cellular reception indoors.

Analysts and the media speculated that consumers would see a flood of such devices, known as femtocells, by the end of 2008. Now, however, that timeline has shifted to late 2009 or 2010, as questions surrounding femtocells remain unanswered. In fact, only Sprint Nextel Corp. is currently offering a commercial femtocell product in the U.S.

That delay gives us time to learn more about the technology, including its benefits and drawbacks. Here's a primer.

What are femtocells? The term *femtocell* refers to the smallest unit of a cellular network and, by extension, the devices and services that make use of them. Other small — but not quite as small — cells include Wi-Fi cells (a.k.a. microcells) and Bluetooth cells (picocells). At the other end of the spectrum are macrocells, such as those used in carriers' cell towers.

What do they do? Femtocells address the problem of poor cell-phone reception indoors by taking advantage of the proliferation of home- and small-office broadband connections. Like the wireless router that distributes a Digital Subscriber Line or cable broadband signal throughout your home, a femtocell device — sometimes called a miniature cellular base station or a mini cell tower — grabs your carrier's cellular signal and boosts it for indoor use, routing your calls through the broadband connection rather than directly through the larger cellular network.

What are the benefits? Subscribers get a stronger, clearer, more reliable signal inside — which means more users may finally be able to ditch their land-line phone service for good. Carriers benefit by being able to offload traffic from their main networks, saving them the substantial cost of building more cell towers.

How far do they reach? Femtocells have a range of around 5,000 square feet and are intended for use inside a single home or small office. If you leave the building in the middle of a call, the call is handed off to your carrier's nearest cell tower.

Where can I get one? Because femtocell devices are tied to wireless carriers using licensed spectrum, you have to wait for your provider to offer femtocell service.

In September 2007, Sprint Nextel became the first U.S. carrier to introduce a femtocell service, called Airave. The service was initially available in Denver and Indianapolis and was rolled out nationwide in August 2008. A femtocell box plugs into your existing router or modem, sending incoming and outgoing cellular calls through your broadband connection. Up to three callers can use the service at the same time.

How much does it cost? Cost is one of the questions still without a clear answer. Critics point to the many fees associated with Sprint's Airave femtocell service. First, there's the $100 cost of the box. Then there's the $5 monthly service charge, in addition to the fee for your regular calling plan and minutes used. If you don't already have an unlimited plan, you can opt to pay an extra $10 a month for unlimited Airave minutes; for families, that's an extra $20 per month. Finally, add the cost of your broadband.

■ The term femtocell refers to the smallest unit of a cellular network and, by extension, the devices and services that make use of them.

Can femtocells be used for data? Airave supports 1xRTT data but does not support high-speed 1xEV-DO data. However, 3G femtocell services will provide high-speed data access in Japan early this year and are likely to appear in Europe soon after that, analysts say.

What about security? Femtocells use proprietary security, with a firewall that sits between caller and carrier.

Critics of Airave have pointed out that the device ships "unlocked" to all Sprint customers — in other words, anyone with a Sprint phone in range of your femtocell can use your connection. However, the company points out that in most cases, other users would have to be inside your home to be in range of the femtocell. You can also choose to restrict access to the service to up to 50 select phone numbers.

Whether other carriers will make their femtocell devices accessible to other customers by default remains to be seen. ■

Sutherland *is a freelance writer who has followed the rise and fall of countless technologies over the years.*

Some Incidents Can Make Life Interesting

There's no such thing as a **good security incident,** but some cases are **more instructive than destructive.**

NO SECURITY manager wishes for a security incident. They can be costly, disruptive and a professional black mark.

But getting to the bottom of a minor event — one that causes no real harm or has a minimal effect but isn't run-of-the-mill and therefore requires a bit of investigating — can make the job more challenging. You have to figure out just what happened so that you can prevent a recurrence, and you have to do it quickly so that damage is kept to a minimum. It's a time-sensitive task that requires quick thinking and expertise.

We just had an incident of that sort, and it's an interesting story.

It all started with a call to our HR department from the company that provides our 401(k) services. As happens from time to time, a rogue server had been identified by law enforcement. In extracting evidence from the server, they discovered that it contained connection information for the 401(k) administration site and the IP address of my company's corporate firewall. (We translate all of our internal desktop IP addresses to that external address.) Within the logs was a reference to ANTIVIRXP08, which is a piece of malware that disguises itself as a virus detection tool. When a user is tricked into installing it, the malware will do nasty things, such as capture keystrokes and then "call home" with all the data entered or submitted by the victim.

We could see that two of our employees had fallen victim to the malware, so the first order of business was to disconnect them from the Internet. I instructed them to use clean systems and to change their passwords for every corporate and personal account they use. We also helped them set up fraud alerts on their credit reports.

■ Two of our employees had fallen victim to malware, so the first order of business was to disconnect them from the Internet.

Next up was determining whether we had really been affected. First, we took an image of the two systems, allowing us to conduct a forensic examination of the image while leaving the original system intact. We looked for registry entries, processes and anything else that might indicate that the systems had been infected. Fortunately, there was no evidence of system compromise. In fact, the two systems were up to date with patches and antivirus software. Next, we reviewed our firewall and proxy logs to see whether the traffic included anything that might suggest an infected desktop calling home. Again, nothing.

This was puzzling. How could connection information for a 401(k) administration site show up on a rogue server out on the Internet without leaving behind any relevant forensic information on our affected desktops? My first thought was that the financial institution's Web application was the victim of a cross-site scripting attack and that our users were tricked into executing malicious code on the 401(k) administrative Web site, which collected the connection information. However, the 401(k) administrator's security people assured me that their company had not been affected.

I then asked for the full access logs from the rogue server. Analysis of those logs revealed that the connection attempts had occurred in September. That explained the anomaly. Our logs go back only 30 days.

We use Trend Micro's OfficeScan for corporate desktop and server antivirus protection, and it keeps logs for all our machines. Sure enough, it had detected and cleaned the ANTIVIRXP08 code from both systems. That explains why the forensic analysis came up clean as well.

I still have some concerns and will continue to follow up to determine whether the malware was able to call home to the rogue server with the connection information. But for now, there's not much else to do except close the investigation, pending any further information. ■

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

Trouble Ticket

AT ISSUE: Malware seems to have sent information to a third-party server.

ACTION PLAN: Determine exactly what happened, what was transmitted and who might be affected.

JOIN IN
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■ OPINION

Paul Glen

Involuntary Consultatude

OVER THE YEARS, I've noticed that when the economy turns sour, the number of people calling themselves consultants grows dramatically. Sometimes it seems the definition of *consultant* has been changed to "person between jobs."

Since this month marks the 10th anniversary of my choice to become an independent consultant (note the word *choice*), I suppose that I'm now qualified to offer advice to those who recently began, or will soon start, calling themselves consultants.

If you want to thrive in this next phase of your career, you need to be clear about a few things. As you consider these issues, be completely honest with yourself. And recognize that honesty can be exceedingly difficult at a time when you feel vulnerable and out of control.

First, think about what you really want. Why are you becoming a consultant? Is it something to do until the next job presents itself? Is it just a panicked reaction to the need to cover the next mortgage payment? Are you just looking for a steady income? Does the life of a consultant seem somehow glamorous and exciting compared with the workaday world of the IT employee? Do you want a flexible schedule? Are you hoping to learn lots of new technologies?

These are all valid reasons for calling yourself a consultant, but understanding your own motivations is the first step in selecting the right sort of consulting to do.

Since different people have different ideas of what a consultant is, you will have to craft a definition for what sort of consultant you want to be. The questions below will help guide you to what you really want to do.

1. What type of consultant do you want to be? There are a few broad categories to consider. All of the options offer value to clients and are valid career choices, but you need to be clear about which one you are interested in.

■ **Contractor.** Most people who call themselves consultants are really contractors — temporary employees, devoted to a single client, working on the delivery of services. They usually work on a discrete project and stay with a client for a limited duration.

■ **Employee on audition.** For many contractors, the contract is really an audition. If a contractor likes the client and vice versa, the contract can turn into a permanent job.

■ **Management or technical consultant.** Actually, consultants are different from both employees on trial and contractors. They rarely work on long-term assignments as temporary employees. They remain outside of the organization and advise managers on how the companies themselves should work or on some aspect of how technology can be leveraged.

■ Sometimes it seems that the definition of *consultant* has been changed to 'person between jobs.'

Consultants, contractors and employees on trial all look for work differently and are paid differently.

2. What value can you offer? Before you think too much about your own needs, think about what value you can offer clients. If you're too focused on your own needs, you're unlikely to get far. You need to think about the skills and capabilities that you bring to a client and the organization.

Be articulate about that value. Think of the client asking you this question: "Why should I pay you anything?" If you can't answer that one well, you're in for some trouble.

3. For whom do you want to work? The value you can offer has to be tailored to the clients you want to serve. Horseshoeing is a great skill — but only for clients with horses.

One of the biggest mistakes new consultants make is telling everyone they know that they can do anything for anyone. The next biggest mistake they make is believing it. That doesn't display competence or confidence, only desperation. And that's not a good way to enter a new profession. ■

Paul Glen *is the founder of the GeekLeaders.com Web community and author of the award-winning book* Leading Geeks: How to Manage and Lead People Who Deliver Technology *(Jossey-Bass, 2003). Contact him at info@paulglen.com.*

Career Watch

401(k): WHAT'S GOING ON IN THOSE UNOPENED ENVELOPES

Haven't had the heart to check the undoubtedly plummeting balance in your 401(k) account? Leave the envelopes from your plan sealed if you find these averages depressing.

	2007	2008
Average plan balance	$79,000	$68,000
Individual savings rate	8%	7.8%
Assets held in stocks	68.1%	53.8%
Assets traded/reallocated	3.5%	5.3%
Employees withdrawing funds	5.4%	8%

SOURCE: HEWITT ASSOCIATES ANALYSIS OF DATA ON 2.7 MILLION EMPLOYEES, NOVEMBER 2008

Jobs Snapshot

19% Percentage of workers who said they would like to find a new job in 2009

49% Percentage who cited better pay and/or career advancement opportunities as the primary reasons for their desire to change jobs

25% Percentage who reported that they are dissatisfied or very dissatisfied with their pay

35% Percentage of workers who stated that they did not receive a raise in 2008

25% Percentage of those who received a raise who said they were given an increase of 2% or less

63% Percentage of all workers who did not receive a bonus

SOURCE: CAREERBUILDER.COM ONLINE SURVEY OF 6,209 U.S. EMPLOYEES, NOVEMBER 2008

PAGE COMPILED BY JAMIE ECKLE.

■ Q&A

Joe Takash

The **president** of performance management firm **Victory Consulting** discusses the best way to **confront the boss.**

You say most people prefer to avoid difficult conversations with their bosses, but when one is necessary, they should think of it instead as a productive confrontation. What do you mean by that? It's helpful to make the distinction. Unproductive conflict is typically reflected by selfishness, defensiveness and insecurity. This is highly detrimental and can permanently damage business relationships when name-calling is involved and insulting or disrespectful tones and language are demonstrated. Productive confrontation is healthy and honest, with a positive focus on seeking perspective from all sides, respecting input and focusing on solutions that benefit all involved. We should encourage pushback and solicit honesty, so long as it is done with respect and in the spirit of improvement and resolution.

So if I'm unhappy about something at work and feel the need to talk about it with my boss, how should I prepare? Choose a time that is good for both of you, and make the polite request for no distractions. Ahead of the meeting, seek counsel from people who you know are going to be honest with you about your view of the situation and your planned approach. It's easy to live in a vacuum without knowing your blind spots. Gaining different perspectives allows you to build a confident, cogent approach that can benefit you and the party you confront. Finally, prepare bullet-pointed notes – not a script – in writing. Be sure that it allows you to communicate your viewpoint in a logical order that is easy to understand.

And what are the most important things to do in the meeting itself? Be succinct, and listen. Be sure to state your intentions upfront, followed by what you hope the resolution could be. Be direct and friendly by looking the other party in the eyes and speaking with a confident, polite tone. Once you've made your original points, practice silence and be a fully engaged listener. Valuing the perspective of the other person will bring you a step closer to a productive outcome.

In the end, agree on a resolution. At the conclusion of the meeting, verify how your message was received, then discuss what the next step should be for application and follow-up. This agreement can be documented and serve as a strategic road map for a stronger working relationship, one that can be referenced if subsequent disagreements arise.

And if the meeting with my boss starts to go off the rails somehow? Ask if meeting another time would be better. Explain that your intention is to resolve, not to trade insults or show disrespect. Inquire whether there is a deeper issue you may not be aware of, asking for an example or specific occasion. But if your boss has a tendency to go off the rails as a consistent pattern, ask yourself if you're in the right position.

– JAMIE ECKLE

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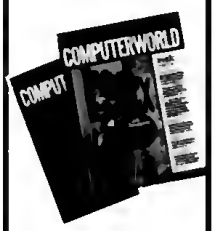

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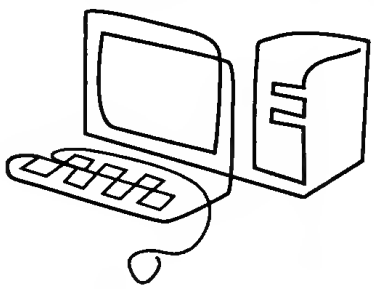

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Shark Tank

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Now That's Lunch!

This pilot fish is "scholar in residence" at a local library that has just acquired a new Unix server in order to move into the Information Age. "Their local Web guru had built a whole Web site, over 200 pages – all using IP addresses instead of domain names, since it was faster," groans fish. "Then they wanted to install a firewall." Firewall company sends out a contractor, who spends the morning setting up the firewall on the server. Then, at about noon, everything suddenly shuts down. It seems the firewall needs IP addresses that the Web guy used for his pages. No big deal, says the contractor – I'll dump your pages to the removable drive, take them back to my office, fix the IP addresses and come back. His estimate: 30 hours at $200 per hour. Everyone on the library staff gulps, then leaves for lunch. Everyone except fish, that is – he brown-bags it. "Since I know a little Unix, I wrote a shell script to drive a sed script to copy all the HTML files to a backup directory, then replace all the IP addresses with domain names," fish says. When the folks came back from lunch, the problem was solved. Library saved at least $6,000, firewall got installed, and I got thanks. Everybody except the firewall consultant was pleased. It was a good lunch hour."

Go Away, Kid, Don't Bother Me

Software vendor is moving its product from an old computer to a new one at the business where this pilot fish works. But the vendor is having trouble getting the security group templates set up on the new machine. "The company's software manager sent e-mail asking me how it was set up on the old computer," fish says. "I replied that I thought it was automatic with their software's nightly process, but that I'd test that assumption by adding a new security group and let them know the results." Turns out fish is wrong, so he e-mails back results showing that the nightly process didn't add the new test group after all. The response? "Their project manager told me to quit e-mailing them until their senior programmer had time to check out the problem," sighs fish. "And *they* asked the question!"

Dead Letter Office?

This regional retail chain relies heavily on fliers it mails to customers. But not everyone is clear on how to use the customer list, says a pilot fish there. "Some store clerks have been using the name and address fields for notes, so mailings are going out to 'Bad Check Smith' and 'Deceased Jones,' " fish says. "And I ran across this comment: 'Customer informs us that customer is dead.' Was that by e-mail, voice mail or snail mail?"

■ *Sharky prefers to get your true tale of IT life by e-mail: sharky@computerworld.com. You'll snag a snazzy Shark shirt if I use it.*

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■ FRANKLY SPEAKING

Frank Hayes

No Rx for ROI

IT SHOULD BE EASY. Electronic health records (EHR), if widely used in the U.S., could save more than $200 billion a year (see story, page 12). The total cost of rolling them out is estimated at $100 billion. They would pay for themselves in six months. Now *that's* ROI.

So why have 65% of hospitals and 95% of doctors still not jumped on the EHR bandwagon? What's holding up EHR?

Sure, there are unresolved security and privacy issues. And competing standards for health record formats. And probably a healthy dose of technophobia on the part of some doctors and hospitals. That would explain it — right?

Maybe. On the other hand, maybe that great return on investment isn't so great for the people making the investment.

Here, look: How do you measure ROI? Usually it's the sum of increased revenue, lower costs and reduced risk.

Now suppose you're a doctor or hospital that's not part of a managed care plan. Where's your ROI from EHR?

Will it increase your revenue? Nope. Remember, EHR helps to cut costly duplication of services: tests, treatments, prescriptions, office visits. Those are all the things that doctors and hospitals charge for. For every blood draw or nitroglycerine patch or specialist exam that isn't requested, somebody's revenue actually goes *down*.

Will EHR cut costs? Maybe a little, in processes like record keeping. Sure, the insurance and managed care companies will save a bundle from all those avoided procedures that they don't have to pay for, and all the fraudulent claims that EHR will help to catch. But doctors and hospitals? Not so much.

Will EHR reduce your risk? Yes — and no. Certainly, having a patient's complete records easily available means a doctor can make better decisions more quickly. That reduces the risk of a serious mistake — and maybe a malpractice suit.

■ Doctors and hospitals will lose revenue, cut few costs and face increased risk. No wonder EHR doesn't sound so great to them.

On the other hand, lack of information isn't the only reason why doctors order a new set of tests or make their own measurements. Sometimes the information they've received just looks *wrong*. And going with that wrong-looking data is *very* risky.

Another risk is the temptation to use EHR to automate medical processes based on "best practices" — a favorite pitch of EHR boosters. But as IT people, we know this: Automation is really good for routine processes.

It's not nearly so good at exception handling. And the practice of medicine is heavy on exceptions — especially in difficult, high-stakes cases.

And if things go horribly wrong, it's the doctor and hospital that will get sued. That makes replacing a doctor's medical judgment with hard-coded automation a *very* risky proposition.

So let's recap: The doctors and hospitals that will shoulder the expense, effort and pain of EHR will lose revenue, cut few costs and probably face increased risk.

No wonder EHR's ROI doesn't sound so great to most of them.

Does that mean they'll never accept EHR? Of course not. Risks and costs *can* be reduced, especially if EHR systems are focused on tools that doctors can control to be more efficient — instead of on automation to control doctors.

EHR truly does hold the promise of improving patient care and helping to control soaring medical costs. It really could save insurers and patients hundreds of billions of dollars every year.

But right now, the people being asked to make the investment aren't likely to get much of the return. For them, EHR doesn't make business sense.

And until it does, don't expect this to be easy at all. ■

Frank Hayes is Computerworld's senior news columnist. *Contact him at frank_hayes@computerworld.com.*

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